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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/762,736
Filing Date: January 21, 2004
Appellant(s): LAINEMA ET AL.

Joseph V. Gamberdell Jr.
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 6/2/10 appealing from the Office action, Pre-Appeal Decision mailed 5/4/10, and the Final Rejection mailed 11/23/09.

(1) Real Party in Interest

The examiner has no comment on the statement, or lack of statement, identifying by name the real party in interest in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

Claims 33-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nieweglowski (WO 97/16025) in view of Yagasaki (5,428,396), as rejected in the Final Rejection mailed 11/23/09.

(4) Status of Amendments After Final

The examiner has no comment on the appellant's statement of the status of amendments after final rejection contained in the brief.

(5) Summary of Claimed Subject Matter

The examiner has no comment on the summary of claimed subject matter contained in the brief.

(6) Grounds of Rejection to be Reviewed on Appeal

Claims 33-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nieweglowski (WO 97/16025) in view of Yagasaki (5,428,396).

(7) Claims Appendix

The examiner has no comment on the copy of the appealed claims contained in the Appendix to the appellant's brief.

(8) Evidence Relied Upon

5,428,396	YAGASAKI	6-1995
WO97/16025	NIEWEGLOWSKI	5-1997

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 33-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nieweglowski (WO 97/16025) in view of Yagasaki (5,428,396).

Regarding claim 33, Nieweglowski discloses a method for decoding encoded video information, the method comprising:

determining, via a decoder, a prediction error quantizer from encoded video information, the prediction error quantizer used to quantize prediction error transform coefficients (fig.2, Nieweglowski's element 22 determines the prediction error quantizer from the encoded video information as obtained from the encoder shown in fig.1, see page 2, lines 1-7, and that in fig.2, the output of the video information is "decoded video" is the decoded video information outputted by a decoder); and

determining the prediction error quantizer, the motion coefficients representing the motion of a picture segment (fig.2, note, from fig.1, element 3 is the motion field coding section that produces the "motion coefficients" that are multiplexed and sent to the decoder of fig.2, where element 21 obtains the motion coefficient data of the picture segment data, and that fig.5 discloses a motion field coder with quantization or QR values determined, see line 14 on page 8 to line 9 on page 9); and

decoding encoded video information into an image based on the prediction error (fig.2, Nieweglowski's element 22 determines the prediction error quantizer from the encoded video information as obtained from the encoder shown in fig.1, see page 2, lines 1-7, and that in fig.2, the output of the video information is "decoded video" is the decoded video information outputted by a decoder based on the prediction error decoding performed by element 22).

Although the term "quantizer" is not explicitly stated in the Nieweglowski, however, in MPEG video encoding/decoding standard, the use of quantizers is considered an inherent feature, if not, then an extremely obvious feature since MPEG encoders/decoders are known to use DCTs and quantization parameters for

encoding/decoding image data so as to properly encode/decode and transmit video image data for efficiently encoding, decoding and displaying video image data in an accurate manner. Yagasaki discloses the use of quantization for obtaining quantization parameter data in MPEG encoding/decoding systems (fig.5, note Yagasaki discloses element 55 is an inverse quantizer and that fig.4A, element 15 is the quantizer, thus, quantization is known to be used for MPEG encoding/decoding systems).

Nieweglowski does not disclose determining an accuracy of the motion coefficients. However, Yagasaki teaches the determination of the accuracy of the motion coefficients (col.13, ln.24-36, Yagasaki discloses the determination of the range of the accuracy values of the motion vector data that contains motion coefficients data). Therefore, it would have been obvious to one of ordinary skill in the art to combine the teachings of Nieweglowski and Yagasaki, as a whole, for accurately, efficiently encoding and decoding image data while maintaining high image quality and minimizing hardware requirements (Yagasaki col.3, ln.54-61).

Regarding claim 34, Nieweglowski discloses receiving information indicating a motion coefficient quantizer (fig.5, note the motion field coder discloses the “motion coefficient” data produced in motion field coder that includes data with quantization or QR values determined; see line 14 on page 8 to line 9 on page 9). Nieweglowski does not disclose determining the accuracy of the motion coefficients. However, Yagasaki discloses determining the accuracy of the motion coefficients (col.13, ln.24-36, Yagasaki discloses the determination of the range of the accuracy values of the motion vector data that contains motion coefficients data). Therefore, it would have been

obvious to one of ordinary skill in the art to combine the teachings of Nieweglowski and Yagasaki, as a whole, for accurately, efficiently encoding and decoding image data while maintaining high image quality and minimizing hardware requirements (Yagasaki col.3, ln.54-61).

Although the term “quantizer” is not explicitly stated in the Nieweglowski, however, in MPEG video encoding/decoding standard, the use of quantizers is considered an inherent feature, if not, then an extremely obvious feature since MPEG encoders/decoders are known to use DCTs and quantization parameters for encoding/decoding image data so as to properly encode/decode and transmit video image data for efficiently encoding, decoding and displaying video image data in an accurate manner. Yagasaki discloses the use of quantization for obtaining quantization parameter data in MPEG encoding/decoding systems (fig.5, note Yagasaki discloses element 55 is an inverse quantizer and that fig.4A, element 15 is the quantizer, thus, quantization is known to be used for MPEG encoding/decoding systems).

Regarding claim 35, Nieweglowski discloses a decoder for decoding encoded video information, the decoder comprising:

a demultiplexing unit for determining a prediction error quantizer from the encoded video information, the prediction error quantizer used to quantize the prediction error transform coefficients (fig.2, note the “multiplexer” used in Nieweglowski’s fig.2 suppose to function as a demultiplexer since the data obtained from the encoder of fig.1 has a multiplexer for sending data to the decoder embodiment of fig.2, clearly the

"multiplexer" in fig.2 is a typo, and is suppose to be a demultiplexer since data obtained by the "multiplexer" or demultiplexer clearly demultiplexes or divide data into two components: encoded prediction error data sent to element 22 and motion data sent to element 21); and

a motion field coding block for determining the prediction error quantizer, the motion coefficients representing the motion of a picture segment (fig.2, note, from fig.1, element 3 is the motion field coding section that produces the "motion coefficients" that are multiplexed and sent to the decoder of fig.2, where element 21 obtains the motion coefficient data of the picture segment data, and that fig.5 discloses a motion field coder with quantization or QR values determined, see line 14 on page 8 to line 9 on page 9).

Although the term "quantizer" is not explicitly stated in the Nieweglowski, however, in MPEG video encoding/decoding standard, the use of quantizers is considered an inherent feature, if not, then an extremely obvious feature since MPEG encoders/decoders are known to use DCTs and quantization parameters for encoding/decoding image data so as to properly encode/decode and transmit video image data for efficiently encoding, decoding and displaying video image data in an accurate manner. Yagasaki discloses the use of quantization for obtaining quantization parameter data in MPEG encoding/decoding systems (fig.5, note Yagasaki discloses element 55 is an inverse quantizer and that fig.4A, element 15 is the quantizer, thus, quantization is known to be used for MPEG encoding/decoding systems).

Nieweglowski does not disclose determining an accuracy of the motion coefficients. However, Yagasaki teaches the determination of the accuracy of the

motion coefficients (col.13, ln.24-36, Yagasaki discloses the determination of the range of the accuracy values of the motion vector data that contains motion coefficients data). Therefore, it would have been obvious to one of ordinary skill in the art to combine the teachings of Nieweglowski and Yagasaki, as a whole, for accurately, efficiently encoding and decoding image data while maintaining high image quality and minimizing hardware requirements (Yagasaki col.3, ln.54-61).

Regarding claim 36, Nieweglowski discloses determining signaling information indicating a motion coefficient quantizer from to obtain the coefficients from the encoded video information (fig.5, note the motion field coder discloses the “motion coefficient” data produced in motion field coder that includes data with quantization or QR values determined; see line 14 on page 8 to line 9 on page 9). Nieweglowski does not disclose selecting the accuracy of the motion coefficients. However, Yagasaki discloses determining and selecting the accuracy of the motion coefficients (col.13, ln.24-36, Yagasaki discloses the determination of the range of the accuracy values of the motion vector data that contains motion coefficients data). Therefore, it would have been obvious to one of ordinary skill in the art to combine the teachings of Nieweglowski and Yagasaki, as a whole, for accurately, efficiently encoding and decoding image data while maintaining high image quality and minimizing hardware requirements (Yagasaki col.3, ln.54-61).

Although the term “quantizer” is not explicitly stated in the Nieweglowski, however, in MPEG video encoding/decoding standard, the use of quantizers is considered an inherent feature, if not, then an extremely obvious feature since MPEG

encoders/decoders are known to use DCTs and quantization parameters for encoding/decoding image data so as to properly encode/decode and transmit video image data for efficiently encoding, decoding and displaying video image data in an accurate manner. Yagasaki discloses the use of quantization for obtaining quantization parameter data in MPEG encoding/decoding systems (fig.5, note Yagasaki discloses element 55 is an inverse quantizer and that fig.4A, element 15 is the quantizer, thus, quantization is known to be used for MPEG encoding/decoding systems).

Regarding claim 37, Nieweglowski discloses a computer readable storage medium containing a computer program which, upon execution by a computer, directs the computer to perform the method of:

decoding encoded video information (fig.2 is the decoder for decoding encoded video information);

determining a prediction error quantizer from the encoded video information, the prediction error quantizer used to quantize the prediction error transform coefficients (fig.2, Nieweglowski's element 22 determines the prediction error quantizer from the encoded video information as obtained from the encoder shown in fig.1, see page 2, lines 1-7); and

determining the motion coefficients based on the prediction error quantizer, the motion coefficients representing the motion of a picture segment (fig.2, note, from fig.1, element 3 is the motion field coding section that produces the "motion coefficients" that are multiplexed and sent to the decoder of fig.2, where element 21 obtains the motion

coefficient data of the picture segment data, and that fig.5 discloses a motion field coder with quantization or QR values determined, see line 14 on page 8 to line 9 on page 9).

Although the term “quantizer” is not explicitly stated in the Nieweglowski, however, in MPEG video encoding/decoding standard, the use of quantizers is considered an inherent feature, if not, then an extremely obvious feature since MPEG encoders/decoders are known to use DCTs and quantization parameters for encoding/decoding image data so as to properly encode/decode and transmit video image data for efficiently encoding, decoding and displaying video image data in an accurate manner. Yagasaki discloses the use of quantization for obtaining quantization parameter data in MPEG encoding/decoding systems (fig.5, note Yagasaki discloses element 55 is an inverse quantizer and that fig.4A, element 15 is the quantizer, thus, quantization is known to be used for MPEG encoding/decoding systems).

Nieweglowski does not disclose determining an accuracy of the motion coefficients. However, Yagasaki teaches the determination of the accuracy of the motion coefficients (col.13, ln.24-36, Yagasaki discloses the determination of the range of the accuracy values of the motion vector data that contains motion coefficients data). Therefore, it would have been obvious to one of ordinary skill in the art to combine the teachings of Nieweglowski and Yagasaki, as a whole, for accurately, efficiently encoding and decoding image data while maintaining high image quality and minimizing hardware requirements (Yagasaki col.3, ln.54-61).

Regarding claim 38, Nieweglowski discloses receiving information indicating motion coefficient quantizer (fig.2, element 21 receives the motion coefficient quantizer

information as encoded from fig.1, wherein fig.5, note the motion field coder discloses the "motion coefficient" data produced in motion field coder that includes data with quantization or QR values determined; see line 14 on page 8 to line 9 on page 9). Nieweglowski does not disclose determining the accuracy of the motion coefficients. However, Yagasaki discloses determining the accuracy of the motion coefficients (col.13, ln.24-36, Yagasaki discloses the determination of the range of the accuracy values of the motion vector data that contains motion coefficients data). Therefore, it would have been obvious to one of ordinary skill in the art to combine the teachings of Nieweglowski and Yagasaki, as a whole, for accurately, efficiently encoding and decoding image data while maintaining high image quality and minimizing hardware requirements (Yagasaki col.3, ln.54-61).

Although the term "quantizer" is not explicitly stated in the Nieweglowski, however, in MPEG video encoding/decoding standard, the use of quantizers is considered an inherent feature, if not, then an extremely obvious feature since MPEG encoders/decoders are known to use DCTs and quantization parameters for encoding/decoding image data so as to properly encode/decode and transmit video image data for efficiently encoding, decoding and displaying video image data in an accurate manner. Yagasaki discloses the use of quantization for obtaining quantization parameter data in MPEG encoding/decoding systems (fig.5, note Yagasaki discloses element 55 is an inverse quantizer and that fig.4A, element 15 is the quantizer, thus, quantization is known to be used for MPEG encoding/decoding systems).

Regarding claim 39, Nieweglowski discloses an apparatus comprising a decoder for decoding encoded video information, wherein the decoder comprises:

an inverse quantization unit for determining a prediction error quantizer from motion coefficients of the encoded video information, the prediction error quantizer serving to quantize prediction error transform coefficients (fig.2, Nieweglowski's element 22 determines the prediction error quantizer from the encoded video information as obtained from the encoder shown in fig.1, see page 2, lines 1-7, wherein element 22 must inherently discloses an inverse quantizer for inversely quantizing data as encoded by "Predictive Error Coding" from figure 1, as the use of quantizers and inverse quantizers are inherent in the art of MPEG); and

determining the prediction error quantizer, the motion coefficients representing the motion of a picture segment (fig.2, note, from fig.1, element 3 is the motion field coding section that produces the "motion coefficients" that are multiplexed and sent to the decoder of fig.2, where element 21 obtains the motion coefficient data of the picture segment data, and that fig.5 discloses a motion field coder with quantization or QR values determined, see line 14 on page 8 to line 9 on page 9).

Although the term "quantizer" is not explicitly stated in the Nieweglowski, however, in MPEG video encoding/decoding standard, the use of quantizers is considered an inherent feature, if not, then an extremely obvious feature since MPEG encoders/decoders are known to use DCTs and quantization parameters for encoding/decoding image data so as to properly encode/decode and transmit video image data for efficiently encoding, decoding and displaying video image data in an

accurate manner. Yagasaki discloses the use of quantization for obtaining quantization parameter data in MPEG encoding/decoding systems (fig.5, note Yagasaki discloses element 55 is an inverse quantizer and that fig.4A, element 15 is the quantizer, thus, quantization is known to be used for MPEG encoding/decoding systems).

Nieweglowski does not disclose a further quantization unit for determining an accuracy of the motion coefficients. However, Yagasaki teaches the determination of the accuracy of the motion coefficients (col.13, ln.24-36, Yagasaki discloses the determination of the range of the accuracy values of the motion vector data that contains motion coefficients data). Therefore, it would have been obvious to one of ordinary skill in the art to combine the teachings of Nieweglowski and Yagasaki, as a whole, for accurately, efficiently encoding and decoding image data while maintaining high image quality and minimizing hardware requirements (Yagasaki col.3, ln.54-61).

Regarding claim 40, Nieweglowski does not disclose comprising a connection from the decoder to the further quantization unit for communication of information of the prediction error quantizer from the encoded video information for use in the determining of the accuracy of the motion coefficients. However, Yagasaki teaches the connection from the decoder to the further quantization unit for communication of information of the prediction error quantizer from the encoded video information for use in the determining of the accuracy of the motion coefficients (col.13, ln.24-36, Yagasaki discloses the determination of the range of the accuracy values of the motion vector data that contains motion coefficients data, and wherein fig.5, Yagasaki discloses there is two-way communication between the decoder 52 and the quantization unit 55, wherein the

quantization parameter information is extracted for obtaining the prediction error quantizer data from the encoded video data so that the accuracy of the motion vector data that contains motion coefficients data can be ascertained). Therefore, it would have been obvious to one of ordinary skill in the art to combine the teachings of Nieweglowski and Yagasaki, as a whole, for accurately, efficiently encoding and decoding image data while maintaining high image quality and minimizing hardware requirements (Yagasaki col.3, ln.54-61).

Although the term “quantizer” is not explicitly stated in the Nieweglowski, however, in MPEG video encoding/decoding standard, the use of quantizers is considered an inherent feature, if not, then an extremely obvious feature since MPEG encoders/decoders are known to use DCTs and quantization parameters for encoding/decoding image data so as to properly encode/decode and transmit video image data for efficiently encoding, decoding and displaying video image data in an accurate manner. Yagasaki discloses the use of quantization for obtaining quantization parameter data in MPEG encoding/decoding systems (fig.5, note Yagasaki discloses element 55 is an inverse quantizer and that fig.4A, element 15 is the quantizer, thus, quantization is known to be used for MPEG encoding/decoding systems).

Regarding claim 41, Nieweglowski does not disclose wherein, in the determining of the accuracy of the motion coefficients, there is a communication of information of the prediction error quantizer from the encoded video information for use in the determining of the accuracy of the motion coefficients. However, Yagasaki teaches wherein, in the

determining of the accuracy of the motion coefficients, there is the communication of information of the prediction error quantizer from the encoded video information for use in the determining of the accuracy of the motion coefficients (col.13, ln.24-36, Yagasaki discloses the determination of the range of the accuracy values of the motion vector data that contains motion coefficients data, and wherein fig.5, Yagasaki discloses there is two-way communication between the decoder 52 and the quantization unit 55, wherein the quantization parameter information is extracted for obtaining the prediction error quantizer data from the encoded video data so that the accuracy of the motion vector data that contains motion coefficients data can be ascertained). Therefore, it would have been obvious to one of ordinary skill in the art to combine the teachings of Nieweglowski and Yagasaki, as a whole, for accurately, efficiently encoding and decoding image data while maintaining high image quality and minimizing hardware requirements (Yagasaki col.3, ln.54-61).

Although the term “quantizer” is not explicitly stated in the Nieweglowski, however, in MPEG video encoding/decoding standard, the use of quantizers is considered an inherent feature, if not, then an extremely obvious feature since MPEG encoders/decoders are known to use DCTs and quantization parameters for encoding/decoding image data so as to properly encode/decode and transmit video image data for efficiently encoding, decoding and displaying video image data in an accurate manner. Yagasaki discloses the use of quantization for obtaining quantization parameter data in MPEG encoding/decoding systems (fig.5, note Yagasaki discloses

element 55 is an inverse quantizer and that fig.4A, element 15 is the quantizer, thus, quantization is known to be used for MPEG encoding/decoding systems).

(10) Response to Argument

Regarding lines 22-25 on page 3 of appellant's arguments, appellant asserts that the "predictable use" of the prior art elements do not lead to applicant's claimed subject matter, and because the elements of the combined teaching are different, in that the elements of Nieweglowski and Yagasaki are not directly combinable to obtained the claim invention. The examiner respectfully disagrees. In figure 2, Nieweglowski's element 22 determines the prediction error quantizer from the encoded video information as obtained from the encoder shown in figure 1, see page 2, lines 1-7, and that in figure 2, the output of the video information is "decoded video" is the decoded video information outputted by a decoder. Thus, Nieweglowski discloses determining, via a decoder, a prediction error quantizer from encoded video information, wherein the prediction error quantizer used to quantize prediction error transform coefficients. In figure 2 of Nieweglowski, element 3 of figure 1 is the motion field coding section that produces the "motion coefficients" that are multiplexed and sent to the decoder of figure 2, where element 21 obtains the motion coefficient data of the picture segment data, and that figure 5 discloses a motion field coder with quantization or QR values determined, peruse line 14 on page 8 to line 9 on page 9. Thus, Nieweglowski discloses determining the prediction error quantizer, the motion coefficients representing the motion of a picture segment.

Although the term “quantizer” is not explicitly stated in the reference, however, in MPEG video encoding/decoding standard, the use of quantizers is considered an inherent feature, if not, then an extremely obvious feature since MPEG encoders/decoders are known to use DCTs and quantization parameters for encoding/decoding image data so as to properly encode/decode and transmit video image data for efficiently encoding, decoding and displaying video image data in an accurate manner. In figure 5, Yagasaki discloses element 55 is an inverse quantizer and that fig.4A, element 15 is the quantizer, thus, quantization is known to be used for MPEG encoding/decoding systems. Thus, Yagasaki discloses the use of quantization for obtaining quantization parameter data in MPEG encoding/decoding systems.

Nieweglowski does not disclose determining an accuracy of motion coefficients. However, in column 13, lines 24-36, Yagasaki discloses the determination of the range of the accuracy values of the motion vector data that contains motion coefficients data. Thus, Yagasaki discloses determining the accuracy of the motion coefficients. One of ordinary skill in the art has to consider the combination of the references as a whole, not as individual teachings. One cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). The examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one

of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, it would have been obvious to one of ordinary skill in the art to combine the teachings of Nieweglowski and Yagasaki, as a whole, for accurately, efficiently encoding and decoding image data while maintaining high image quality and minimizing hardware requirements, as suggested in Yagasaki's column 3, lines 54-61.

Thus, by combining Nieweglowski and Yagasaki as a whole, one of ordinary skill in the art would arrive at the claimed "determining an accuracy of motion coefficients based on the prediction error quantizer" because the teachings of Nieweglowski and Yagasaki are known in the art since Nieweglowski discloses the known use of determining the prediction error quantizer, the motion coefficients representing the motion of a picture segment, and Yagasaki discloses the known use of determining an accuracy of motion coefficients. Doing so would yield the result of accurate, efficient image compression and decompression for maintaining high image quality and minimizing hardware requirements, as suggested in Yagasaki's column 3, lines 54-61. Also, both Nieweglowski and Yagasaki pertain to the same video coding/decoding environment of MPEG video data, and thus, the references are considered reasonable to combine.

Furthermore, in appellant's figure 10, appellant's motion coefficient removal block 63 (from appellant's motion field coding unit 12*) considers setting certain motion coefficients to zero without causing accuracy of the motion vector field to deteriorate to an unacceptable level, or yielding negligible data. Similarly, Nieweglowski's figure 5

discloses the “motion coefficient removal” within the motion field coder also performs the similar task of considering setting certain motion coefficients to zero without causing accuracy of the motion vector field to deteriorate to an unacceptable level (page 21, ln.34-36). Thus, Niewegloski's motion coefficient removal unit of figure 5 performs in a similar manner as appellant's motion coefficient removal unit of figure 10 for ensuring the motion coefficient accuracy to remain at an acceptable level of operation to ensure the proper determination of the accuracy of the motion coefficients, and that Nieweglowski’s figure 2 is similar to applicant’s figure 2. Thus, the Nieweglowski is relevant to the rejection of the claims, and along with the combination of Yagasaki, the combination of the teachings is reasonable.

Regarding the last three lines on page 3 to line 2 on page 4 of appellant’s arguments, appellant argues that the combination of Nieweglowski and Yagasaki do not lead one to disclose or suggest "determining an accuracy of motion coefficients based on the prediction error quantizer". The examiner respectfully disagrees. See the above paragraphs and the rejection for elaboration. In figure 2, Nieweglowski’s element 22 determines the prediction error quantizer from the encoded video information as obtained from the encoder shown in figure 1, see page 2, lines 1-7, and that in figure 2, the output of the video information is “decoded video” is the decoded video information outputted by a decoder. Thus, Nieweglowski discloses determining, via a decoder, a prediction error quantizer from encoded video information, wherein the prediction error quantizer used to quantize prediction error transform coefficients. In figure 2 of Nieweglowski, element 3 of figure 1 is the motion field coding section that produces the

"motion coefficients" that are multiplexed and sent to the decoder of figure 2, where element 21 obtains the motion coefficient data of the picture segment data, and that figure 5 discloses a motion field coder with quantization or
QR values determined, peruse line 14 on page 8 to line 9 on page 9. Thus, Nieweglowski discloses determining the prediction error quantizer, the motion coefficients representing the motion of a picture segment.

Although the term "quantizer" is not explicitly stated in the reference, however, in MPEG video encoding/decoding standard, the use of quantizers is considered an inherent feature, if not, then an extremely obvious feature since MPEG encoders/decoders are known to use DCTs and quantization parameters for encoding/decoding image data so as to properly encode/decode and transmit video image data for efficiently encoding, decoding and displaying video image data in an accurate manner. In figure 5, Yagasaki discloses element 55 is an inverse quantizer and that fig.4A, element 15 is the quantizer, thus, quantization is known to be used for MPEG encoding/decoding systems. Thus, Yagasaki discloses the use of quantization for obtaining quantization parameter data in MPEG encoding/decoding systems.

Nieweglowski does not disclose determining an accuracy of motion coefficients. However, in column 13, lines 24-36, Yagasaki discloses the determination of the range of the accuracy values of the motion vector data that contains motion coefficients data. Thus, Yagasaki discloses determining the accuracy of the motion coefficients. One of ordinary skill in the art has to consider the combination of the references as a whole, not as individual teachings. One cannot show nonobviousness by attacking references

individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). The examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, it would have been obvious to one of ordinary skill in the art to combine the teachings of Nieweglowski and Yagasaki, as a whole, for accurately, efficiently encoding and decoding image data while maintaining high image quality and minimizing hardware requirements, as suggested in Yagasaki's column 3, lines 54-61.

Regarding lines 13-14 on page 4 of appellant's arguments, appellant states that Nieweglowski does not mention "receiving information indicating a motion coefficient quantizer", "accuracy", "quantizer" or "quantization". The examiner respectfully disagrees. In figure 5, Nieweglowski discloses the motion field coder discloses the "motion coefficient" data produced in motion field coder that includes data with quantization or QR values determined. See line 14 on page 8 to line 9 on page 9. Thus, Nieweglowski discloses receiving information indicating a motion coefficient quantizer.

Although the term "quantizer" is not explicitly stated in the reference, however, in MPEG video encoding/decoding standard, the use of quantizers is considered an

inherent feature, if not, then an extremely obvious feature since MPEG encoders/decoders are known to use DCTs and quantization parameters for encoding/decoding image data so as to properly encode/decode and transmit video image data for efficiently encoding, decoding and displaying video image data in an accurate manner. In figure 5, Yagasaki discloses element 55 is an inverse quantizer and that fig.4A, element 15 is the quantizer, thus, quantization is known to be used for MPEG encoding/decoding systems. Thus, Yagasaki discloses the use of quantization for obtaining quantization parameter data in MPEG encoding/decoding systems.

Nieweglowski does not disclose determining the accuracy of the motion coefficients. However, in column 13, lines 24-36, Yagasaki discloses the determination of the range of the accuracy values of the motion vector data that contains motion coefficients data. Thus, Yagasaki discloses determining the accuracy of the motion coefficients. Therefore, it would have been obvious to one of ordinary skill in the art to combine the teachings of Nieweglowski and Yagasaki, as a whole, for accurately, efficiently encoding and decoding image data while maintaining high image quality and minimizing hardware requirements, as suggested in Yagasaki's column 3, lines 54-61.

Regarding lines 28-29 on page 4 of appellant's arguments, appellant states that Nieweglowski does not disclose the concept of quantization. The examiner respectfully disagrees. The concept of quantization is considered to be inherent in the art of MPEG video encoding/decoding standard in that during the encoding of images, discrete cosine transform is performed to differentiate the DC coefficients and the AC coefficients, then the quantization is applied to quantize the video data (i.e. DC

coefficients) into a format for preparation for variable length coding or entropy coding for transporting the compressed video data to the decoder terminal for high quality image display. Although the term “quantizer” is not explicitly stated in the Nieweglowski, however, in MPEG video encoding/decoding standard, the use of quantizers is considered an inherent feature, if not, then an extremely obvious feature since MPEG encoders/decoders are known to use DCTs and quantization parameters for encoding/decoding image data so as to properly encode/decode and transmit video image data for efficiently encoding, decoding and displaying video image data in an accurate manner. In figure 5, Yagasaki discloses element 55 is an inverse quantizer and that fig.4A, element 15 is the quantizer, thus, quantization is known to be used for MPEG encoding/decoding systems. Thus, Yagasaki also discloses the use of quantization for obtaining quantization parameter data in MPEG encoding/decoding systems. Thus, quantization and quantizers are inherent in MPEG video encoding standard.

Regarding lines 22-27 on page 5 of appellant’s arguments, appellant states that Nieweglowski does not textually mention quantization. The examiner respectfully disagrees. Again, the examiner has already explained this issue in the above paragraphs and in the rejection. In figure 5, Nieweglowski discloses the motion field coder discloses the “motion coefficient” data produced in motion field coder that includes data with “quantization” or “QR” values determined. See line 14 on page 8 to line 9 on page 9. Thus, Nieweglowski discloses receiving information indicating a motion coefficient quantizer. The concept of quantization is considered to be inherent in

the art of MPEG video encoding/decoding standard in that during the encoding of images, discrete cosine transform is performed to differentiate the DC coefficients and the AC coefficients, then the quantization is applied to quantize the video data (i.e. DC coefficients) into a format for preparation for variable length coding or entropy coding for transporting the compressed video data to the decoder terminal for high quality image display. Although the term “quantizer” is not explicitly stated in the Nieweglowski, however, in MPEG video encoding/decoding standard, the use of quantizers is considered an inherent feature, if not, then an extremely obvious feature since MPEG encoders/decoders are known to use DCTs and quantization parameters for encoding/decoding image data so as to properly encode/decode and transmit video image data for efficiently encoding, decoding and displaying video image data in an accurate manner. In figure 5, Yagasaki discloses element 55 is an inverse quantizer and that fig.4A, element 15 is the quantizer, thus, quantization is known to be used for MPEG encoding/decoding systems. Thus, Yagasaki also discloses the use of quantization for obtaining quantization parameter data in MPEG encoding/decoding systems. Thus, quantization and quantizers are inherent in MPEG video encoding standard. The concept of quantization and quantizers is not a patentable feature since MPEG encoding has been around long before the applicant filed this current patent application.

Regarding lines 21-24 and lines 26-27 on page 6 of appellant’s arguments, appellant states that the prior art teachings of Nieweglowski and Yagasaki does not disclose the relationship between the accuracy of the motion coefficients and the

operation of a prediction error quantizer, no discussion of a process of quantization of motion vectors or error quantization in conjunction with a relationship with accuracy. The examiner respectfully disagrees. In figure 2, Nieweglowski discloses from figure 1, element 3 is the motion field coding section that produces the “motion coefficients” that are multiplexed and sent to the decoder of figure 2, where element 21 obtains the motion coefficient data of the picture segment data. Nieweglowski’s figure 5 discloses a motion field coder with quantization or QR values determined. See line 14 on page 8 to line 9 on page 9. Thus, Nieweglowski discloses determining the prediction error quantizer, the motion coefficients representing the motion of a picture segment. Nieweglowski does not disclose determining an accuracy of the motion coefficients. However, in column 13, lines 24-36, Yagasaki asserts the determination of the range of the accuracy values of the motion vector data that comprises motion coefficients data, and that decoder shown in Yagasaki’s figure 5 decodes the data as coded in the encoder embodiment of figure 4A-4B, and that figure 7 shows the degree of accuracy of motion vector S55, including motion coefficient data, is included with the VLC coded data at output of element 17 of figure 4B along with the quantized data output (comprises the predicted error quantizer) of element 15 of figure 4A. Thus, Yagasaki teaches the determination of the accuracy of the motion coefficients, and Yagasaki also teaches the relationship between the accuracy of the motion coefficients and the operation of a prediction error quantizer.

The examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there

is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and In re Jones, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, it would have been obvious to one of ordinary skill in the art to combine the teachings of Nieweglowski and Yagasaki, as a whole, for accurately, efficiently encoding and decoding image data while maintaining high image quality and minimizing hardware requirements, as suggested in Yagasaki's column 3, lines 54-61.

Regarding lines 3-7 on page 7 of appellant's arguments, appellant states that Nieweglowski does not disclose what quantization is actually employed, and communicating the quantization to the motion compensated prediction of a receiver of the video image, Nieweglowski cannot serve as a basis for rejection of the claims. The examiner respectfully disagrees. Again, the examiner has already explained this issue in the above paragraphs and in the rejection below. In figure 5, Nieweglowski discloses the motion field coder discloses the "motion coefficient" data produced in motion field coder that includes data with "quantization" or "QR" values determined. See line 14 on page 8 to line 9 on page 9. Thus, Nieweglowski discloses receiving information indicating a motion coefficient quantizer. The concept of quantization is considered to be inherent in the art of MPEG video encoding/decoding standard in that during the encoding of images, discrete cosine transform is performed to differentiate the DC coefficients and the AC coefficients, then the quantization is applied to quantize the video data (i.e. DC coefficients) into a format for preparation for variable length coding

or entropy coding for transporting the compressed video data to the decoder terminal for high quality image display. Although the term "quantizer" is not explicitly stated in the Nieweglowski, however, in MPEG video encoding/decoding standard, the use of quantizers is considered an inherent feature, if not, then an extremely obvious feature since MPEG encoders/decoders are known to use DCTs and quantization parameters for encoding/decoding image data so as to properly encode/decode and transmit video image data for efficiently encoding, decoding and displaying video image data in an accurate manner. In figure 5, Yagasaki discloses element 55 is an inverse quantizer and that fig.4A, element 15 is the quantizer, thus, quantization is known to be used for MPEG encoding/decoding systems. Thus, Yagasaki also discloses the use of quantization for obtaining quantization parameter data in MPEG encoding/decoding systems. Thus, quantization and quantizers are inherent in MPEG video encoding standard. The concept of quantization and quantizers is not a patentable feature since MPEG encoding has been around long before the applicant filed this current patent application.

Regarding lines 6-7 on page 7 of appellant's arguments, appellant argues that Yagasaki does not disclose aspect of accuracy. The examiner respectfully disagrees. This issue has already been addressed in the above paragraphs. In column 13, lines 24-36, Yagasaki discloses the determination of the range of the accuracy values of the motion vector data that contains motion coefficients data. Thus, Yagasaki discloses determining the accuracy of the motion coefficients. One of ordinary skill in the art has to consider the combination of the references as a whole, not as individual teachings.

One cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). The examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, it would have been obvious to one of ordinary skill in the art to combine the teachings of Nieweglowski and Yagasaki, as a whole, for accurately, efficiently encoding and decoding image data while maintaining high image quality and minimizing hardware requirements, as suggested in Yagasaki's column 3, lines 54-61.

Regarding lines 7-9 on page 7 of applicant's remarks, applicant asserts that Nieweglowski and Yagasaki cannot be combined because there is no motivation to combine. The examiner respectfully disagrees. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and In re Jones, 958 F.2d 347, 21 USPQ2d 1941 (Fed.

Cir. 1992). In this case, it would have been obvious to one of ordinary skill in the art to combine the teachings of Nieweglowski and Yagasaki, as a whole, for accurately, efficiently encoding and decoding image data while maintaining high image quality and minimizing hardware requirements, as suggested in Yagasaki's column 3, lines 54-61.

The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See In re Keller, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

One cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See In re Keller, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); In re Merck & Co., 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Thus, based on the above, it is respectfully submitted that claims 33-41 are obvious to one of ordinary skilled in the art. Accordingly, the Board of Appeals is respectfully requested to consider all of the above remarks and respectfully maintain the rejection of the claims.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Allen Wong/
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